

# Identification of Effective Components and their Determination to Present Complementary Insurance for Dental Services in Iran

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## ABSTRACT

**Background and aim:** The inability of the government to finance the citizen treatment in all therapy eras apparently shows the need for the presence and development of complementary insurance in the health field. This study aims to identify and determine the effective components to present complementary insurance of dental services in Iran.

**Materials and methodology:** This research is applicable in terms of the goal and exploratory mixed in that of data, so 15 experts were used. The data analysis method is a theoretical coding taken from the meta-combination method. In this research, to identify the criteria after reviewing the literature of related studies and interviewing with studied elites and trustees, the meta-combination method was used.

**Finding:** 39 papers associated with complementary health insurance were gathered by insurance organizations. The studied countries had complementary insurance coverage from private and public insurance organizations. Also, in most of the countries, the management and organization were mostly performed by the Ministry of Health at the national and supervision levels. After analyzing the data, variables were classified as nine different levels.

**Conclusion:** Findings of the study showed that the presented complementary health model of dental services consists of 9 major dimensions, the most important of which are economic and service quality factors, and eventually using them, the customer satisfaction will increase.

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## INTRODUCTION

Human health continuously exposure to environmental dangers is a part of the national asset and a benefit or drawback induced by that affects all people in the community. If each member of the community loses his/her health, he/she can pose a threat to others' health or, due to absence from the workplace, enters dangers into the economic system and imposes the costs upon the insurance fund during the treatment stages.<sup>[1]</sup> On the one hand, the studies show that exceeding a slope of health and medical costs in the diagram relative to the growth diagram of the gross domestic product (GDP) as well as the insured persons' failure to use the majority of health care facilities and to cover some of the health services in the basic health insurance, poses a new approach as one of the ways of improving the health insurance situation to complementary health insurance.<sup>[2]</sup> The borders with presenting the health service to the patients have been extended, as far as from at least economic view, it is not cost-efficient to provide these services in a health insurance service form. In many countries, complementary health insurance is used to present these services.<sup>[3]</sup>

Particularly, complementary health insurance aims to allow the insured persons to use nongovernmental health facilities; fill the gap between services and obligations to the basic health insurance, and create conditions for innovation, diversity, and competition in the field of health insurance activities relied on people's participation in financing. With an overview of the performance of insurance health provider organizations, it appears that this section of the health system is faced with different problems such as lack of the sufficient recognition of complementary health insurance; that of necessary comprehensive science, and service adequacy; and that of a clear boundary between basic and complementary health insurance.<sup>[4]</sup>

### KEYWORDS:

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In fact, the complementary health insurance has been created to increase the customer's option of choosing service. In other words, insured persons who want to pay more, can use a broad range of services. Insufficient coverage of public health insurance service is the factor to choose complementary health insurance; among these, Supreme Council of Health who was responsible for approving complementary health service was determined. While an organizational structure of provider systems for presenting complementary health insurance practically was unconcentrated, it was determined concentrated in policy making and planning as well as its service cost based on the actual cost of service according to the competition principle.<sup>[4]</sup> Utilization of insurance in a public and private complementary health insurance and creation of competition among them can play a significant role in promoting the quality of the health insurance service, raising the customer's satisfaction level with the help of service improvement, and eventually improving the community health.<sup>[5]</sup>

Currently, existing basic and complementary insurance, in the country, does not cover restorative and specialized dental services, but insurance such as insurance of military, banks, shipping, and some other organizations and ministries has covered services under a new definition in this field. Justice has a true definition when all people in the country are supported by dental insurance service in a basic insurance form, but currently, such a work is far from the power of basic insurance in terms of economic power.<sup>[3]</sup> On the other hand, improper distribution of dentists around the country and limitation of specialized service in small towns, villages, and deprived areas causes a rural person to pay a premium which is equivalent to a person who lives in an urban area that this problem distorts tariffs on the dental service.<sup>[6]</sup> The most important index of oral and dental health worldwide and in Iran is the decayed, missing, and filled teeth (DMFT) indicator which shows the level of decayed, missing, and filled teeth in the different age groups.

In Iran, the last time that this index was measured nationally for the 12-year-old age group was in 2004 and showed that every 12-year-old Iranian child on average has 1.86 decayed, missing, and filled teeth.<sup>[7]</sup> According to the above cases, this research was performed to identify and determine the effective components for presenting complementary dental service insurance in Iran.

## LITERATURE REVIEW

Zahedi and Gorji performed a study on comprehensive quality management in the Iranian insurance industry and presented the desired model. According to the performed studies, 5 gaps were identified in the quality of insurance services based on Serocal's model and gap model of service quality with the measurement of service quality, which had implied that the service quality is low. Finally, reviewing and integrating the comprehensive quality management approach, Serocal's model, and service quality gap model, the researcher has designed a desired comprehensive management model for the national insurance industry, that the performed statistical tests have verified its validity.<sup>[4]</sup> In Vafaei Najari's study, "An adaptive study of the structure and content of complementary health insurance", done in some selected countries, a model

for Iran was presented. The results of this research showed that insufficient public service coverage (89%) had been the most important factor in the selection of complementary health insurance; at the same time, the Supreme Council of Health who was responsible for approving complementary health service was determined.<sup>[8]</sup>

Another study by Zare et al, aimed to investigate the factors affecting the lack of development of group complementary health insurance in terms of insurance professionals. The findings showed that private health insurance been created to fill existing service gaps and cost ones in basic insurance coverage, increase people's satisfaction, and make a choice for a person with better financial ability. The basis for private health insurance coverage in most of the countries is a basis for residence and payment ability, and priority is with group coverage provision.<sup>[9]</sup> The difference in the decline of DMFT between 12-year-olds in Japan and Germany is due to the policy on dental health insurance, which has changed from being a therapist to prophylactic. These findings refer to this that social health insurance has created an equal opportunity for people to utilize dental services and improved the correction of people's oral and dental health care. Of course, in Japan, it should be reconsidered the combination of social health insurance coverage for dental care.<sup>[10]</sup> According to the results of Bloom's research (2008), poor people (means people who have an income lower than 100% of the level of poverty line income) more than ones with higher income, tended to have dental insurance coverage along with his/her comprehensive insurance coverage as well. Almost 45 million people below 65 years old with private health insurance in 2008 did not have dental insurance coverage.<sup>[11]</sup>

## Theoretical framework and research questions

### *The plan of dental insurance in Iran*

There is no private dental insurance in Iran, but since 1991, all companies and factories can purchase health insurance for their staff from the same commercial insurance company, which ensures their good and service. For health insurance, the employers pay all premia of their staff and families as occupational benefits. The amount of payment paid by the employers as a premium is exempt from the tax that the company must pay. Oral and dental healthcare services are provided with a contract between the commercial insurance companies and dentists' private clinics. In most of industrial cities, employers propose these occupational benefits to their staff.

About 17% of Iranians who have insurance have been covered by the private insurance companies. It is perceived that these annual benefits and services are used.<sup>[12]</sup> Recently, consistent with privatization policies, some commercial insurance companies have been established with benefits of oral and dental healthcare. Remuneration for dentists who work for public insurance is paid by monthly salaries and for contracted ones via the service cost. The insured persons can only use one insurance plan.<sup>[12]</sup>

### *The factors related to insurance and use of oral-dental healthcare services*

Several studies have been performed to identify the factors affecting the amount of oral-dental healthcare use, especially

the important factor of dental insurance according to the demand levels for use of oral-dental healthcare services.<sup>[13]</sup> Costs of oral-dental healthcare have caused people to avoid dental visit.<sup>[14]</sup> So, the plans sharing the costs by the third-party institute or supportive organization such as insurance or health insurance try to decrease or improve the cost barriers and make access to oral-dental healthcare easier.<sup>[15]</sup> Since the financial barriers have been eliminated, total costs paid by the patients reduced, and users' purchasing power of these services raised, the perception of needs can be changed to a need or demand very easier.<sup>[15]</sup>

### Acceptability of oral-dental health services

Since today, the patients are well aware of the health subject and their rights, so they are more concerned about the services they receive.<sup>[16]</sup> Providers of dental services must care about patients' expectations and be prepared to serve well to keep them.<sup>[17]</sup> The patients generally evaluate the services and state their satisfaction, (i.e. the technical and individual factors, as well as service wage, identify whether the service is good or not) and show their perception of dentists and provided services with being satisfied with services who received.<sup>[18]</sup> It is a complicated process to evaluate patients with oral-dental healthcare services relied on their knowledge and selection.<sup>[19]</sup> Patients' expectations based on the factors, individual expectations, and life environment are more effective than the socio-demographic factors and their personality; and characteristics of the healthcare provider system also affect the patients' evaluation.<sup>[20]</sup>

The patient does not have the essential expertise to evaluate the provided service quality. Therefore, the service provider plays two roles as an advisor or leader of patients and of course, provides the healthcare. In the role of the leader-advisor, all dentists must provide oral-dental health services based on the evaluation and social-financial situation of the patient without considering any economic benefits.<sup>[21]</sup> In developed countries, people 80 years old must have at least 20 healthy teeth. In these countries, in ages of 35 years old, currently, the basic health insurance is faced with different problems such as not coverage of some health services including dental ones, insured inability to use most of the health services, and a high share of health costs paid by insured, etc. and governments use complementary health insurance to solve this problem. Also, utilization of insurance in the private-public complementary health insurance form and creation of competition can play a significant role in the promotion of health insurance service quality and improvement of the service consumer's satisfaction level. According to the above cases, to design a complementary insurance model of dental services for Iranian insurer organizations, the questions have been posed and tested as follows:

1. How are the concepts of complementary insurance of dental services in the selected countries?

2. How is the situation of complementary insurance of dental services in the selected countries?
3. How is complementary insurance of dental services in the selected countries?
4. How is the situation of complementary insurance of dental services in Iran?

## MATERIALS AND METHODS

This research is applicable in terms of the goal and exploratory mixed in that of data. At last, it is grounded in terms of the nature and type of the study and cross-sectional in terms of time. The statistical population in qualitative studies performed by the interview consists of experts who associate with research subjects in the studied field. In the qualitative analysis, the sample size is between 5 and 15. The statistical population in the qualitative part of the current study includes academic and theoretical experts.

Non-probability and purposeful methods have been used for sampling in the qualitative part. The sampling process was continued to achieve theoretical saturation, and eventually, eight experts have participated in this stage.

In the qualitative part, the data collection method is an interview method and its tool an interview form or semistructured questionnaire. In this study, the interviews were conducted in person with taking notes, and some of them were recorded (with the permission of interviewees). After doing the interviews with experts and thinkers, they were implemented, and then the gathered data combined and analyzed. In other words, the common data were unified and classified.

Here, to determine internal validity (credibility) of findings, comments and guidelines of some group of experts were considered, regardless of verification and selection of data with studying the theoretical basics, research background, resources, and interview with focal persons; and before coding, final adjustments were made. To verify the accuracy of data, the validity of the study was investigated by way of research members. To determine external validity (transferability) of findings, the techniques for achieving theoretical saturation, using specific coding processes, analyzing symbols and signs, and richly describing data were utilized. Also, to determine the validity (verifiability) of findings, three techniques, including data collection from several sources, negative case analysis, and flexibility of the method, were used. Particularly, research validity has been obtained from four-way consensus (data consensus, researcher's consensus, theories' consensus, and methodological consensus).

To calculate reliability, it has been used the internal agreement method. The results are given in the table below. As the table shows, the codes recorded by every researcher are 52, total number of agreements between these codes above 45 cases, and that of disagreements below 10. Reliability between 2 coders (programmers) is above 80% using the mentioned formula, so it is confirmed.

**Table 1:** Reliability calculation

Number	Interview number	Total number of data	The number of agreements	The number of disagreements	Retest reliability (%)
7	45	52	2	1	86
4	48	52	5	2	92
1	50	52	8	3	96

Data analysis in the qualitative method is a theoretical coding taken from the meta-combination method. Meta-combination is a non-statistical method used to integrate, evaluate, and interpret the findings of several qualitative studies. After formulating the questionnaire in terms of the obtained theory, validity of it is determined using content validity index (CVI), content validity ratio (CVR), and confirmatory factor analysis (CFA). At last, the validated questionnaire was distributed, and quantitative data were collected. To analyze the quantitative data in this research, CFA was used. To design the primary model of the research, interpretive structural modeling (ISM) has been used.

## RESULTS

In the qualitative content, the analyst studies, interprets and infers the document after choosing it with tools of semiotics, logic, scientific and psychological knowledge, as well as understanding the text and context [22]. The results of the adaptive study have also been presented in Tables 2 and 3.

### Meta-combination qualitative analysis method

To achieve the goal of this research, the meta-combination method was used consistent with Lipsey and Wilson (2001) [23]. This model includes 7 stages, in the following, based on Arab et al. (2014), these 7 stages will be described, and different methods of dimensions of this research explained.

#### First stage: The adjustment for the purpose of the study (Table 4)

Different dimensions such as the studied community, what, when, and how it is performed are used to adjust the research question.

#### Second stage: A systematic review of the literature (Table 5)

Secondary data have been used as old documents and evidence to gather research data. The documents and evidence have included all research in complementary health and dental service insurance. Here, papers and research performed from 2000 to 2020 have been studied. Reviewing and identifying the researches through the research platform of the national library, other libraries, research institutes, and websites

such as Science Direct, Google Scholar, Springer, Emerald, Researchgate, World scientific, Magiran, Noormags, etc. along with keywords associated with complementary health insurance indicators in the title field, 82 types of research were found in total.

### Third stage: Research and selection of suitable texts

In this stage, the researcher removes some of the papers in every review, which is not examined in the meta-combination process. In this stage, with the aim of increase in the research results, the remaining papers were studied in terms of methodological quality till the papers with low methodological quality were excluded from the process. In this way, the critical appraisal skills program (CASP) (or Rubric quality control tool) was used based on 10 criteria (Rider & Lancelot, 2018). So, the number of 82 papers were entered to be evaluated and assessed based on ten criteria, that as a result of ISM, 39 papers were confirmed.

Lastly, after refining 4 stages among 82 studies, 43 were removed and others were selected to analyze the information. Qualitative studies of the research were defined. The questions focus on the following cases:

1. Research objectives;
2. Methodological logic;
3. Research plan;
4. Sampling method;
5. Data collection;
6. Reflectivity (that refers to the relationship between the researcher and participants);
7. Ethical considerations;
8. Data analysis accuracy;
9. The obvious explanation of findings;
10. Research value.

In this research, 39 remaining studies on the investigation of the title, abstract, content, and research method in the prior section were assessed by essential evaluation skills. After allocating the score to characteristics of each study and removing studies with a score less than 31, 39 studies were accepted in the evaluation process, of which 13 obtained very good score and 26 good.

**Table 2:** The review of insurance characteristics in Iran

<i>Type of social security organization</i>	<i>The situation of complementary health insurance coverage</i>	<i>The basis for premium calculation and population coverage</i>	<i>Repayment form</i>
Social security organization	Does not have	-	-
Health insurance organization	Atieh Sazane Hafez Company directly provides complementary health insurance services for the employees of the health service insurance organization.	Coverage is presented in a group form, regardless of age, sex, and health situation factors.	There is no payment when referring to the contracted units; in other cases, repayment is done.
Military health insurance organization	It has a contract with Iranian insurance and presents the coverage directly.	It is performed the same as commercial insurance.	Same as Atieh Sazane Hafez insurance
Commercial insurance	Dana, Iran, Asia, and Alborz	The coverage is presented in a group form considering the health situation.	Same as Atieh Sazane Hafez insurance
Others	Kowsar Insurance Company	Dental supplement	Repayment (guaranteed)



**Table 3:** The characteristic of complementary health insurance in the *studied countries*

Country	Complementary health insurance	Considerations
US	It is entirely presented by the private sector.	Supervision and evaluation systems are in the hands of independent non- governmental organizations.
Germany	Complementary health insurance has entirely been transferred to the private sector. Basic treatment has voluntarily been transferred to the private sector.	Supervision and evaluation systems are governmental.
Australia	The activity of the private sector is limited in this country and covers the services in excess of the basic health insurance commitment. The private institutes are faced with hard regulations in the insurance issues. The case cares find a way to enter into a private market.	Supervision and evaluation systems are governmental.
Slovakia	Commercial insurance and life insurance companies cover complementary insurance. Most of the people are not covered by compulsory insurance, or people who do not live in Slovakia or have not been employed there are covered by complementary insurance.	Complementary health insurance does cover the services and costs which not covered by the compulsory insurance.
France	The health service system of France presents the services to all citizens through the private-public sector. Governmental complementary health insurance is presented for poor people.	Supervision and evaluation systems are governmental.
Finland	Private health insurance has been defined due to the inefficiency of a governmental system. The cooperative treatment fund presents benefits of basic and treatment coverage.	Supervision and evaluation systems are governmental.
<i>The Philippines</i>	<i>The national insurance program of the Philippines presents benefits of complementary insurance coverage as well. The private sector is also active.</i>	<i>Supervision and evaluation systems are governmental.</i>
<i>The Netherlands</i>	<i>About 37% are covered by complementary insurance coverage.</i>	<i>Supervision and evaluation</i>

**Table 4:** Research *questions*

Parameter	Research question
What	What are the necessary indicators to design a complementary insurance model of dental services for Iranian insurer organizations?
Who, when	Who are the effective factors in designing a complementary insurance model of dental services for Iranian insurer organizations?
How	How do the dimensions affecting the design for complementary insurance models of dental services for Iranian insurer organizations influence each other?

**Table 5:** The result of the essential evaluation skill program related to the assessment

Total scores	Research method	Clear an obvious explanation of findings	Accuracy of the data analysis	Ethical considerations	Reflectivity	Data collection	Sampling method	Research plan	Methodological logic	Research goals	Paper criterion
38	4	3	3	5	4	4	4	3	4	4	1
39	4	4	4	5	3	4	4	3	4	4	2
37	4	5	4	5	3	4	2	4	3	3	3
40	4	4	4	5	4	3	4	5	4	3	4

39	3	4	3	5	4	4	3	4	4	5	5
44	4	4	4	5	5	4	4	5	4	5	6
30	3	3	3	5	3	3	3	2	3	2	7
32	3	2	3	5	3	3	3	4	3	3	8
32	2	3	4	5	3	2	3	3	4	3	9
37	4	3	4	5	3	3	4	3	4	4	10
39	4	4	4	5	3	4	4	3	4	4	11
33	3	4	3	5	4	3	4	2	3	2	12
32	2	3	4	5	2	3	4	4	3	2	13
39	4	4	4	5	3	4	4	3	4	4	14
38	3	4	4	5	4	4	3	4	4	3	15
39	4	4	3	5	4	4	4	4	4	3	16
37	4	4	4	5	4	3	3	3	3	4	17
41	4	4	4	5	4	4	4	4	4	4	18
40	4	4	4	5	4	3	4	4	4	4	19
29	2	3	2	5	3	4	3	2	3	2	20
37	3	4	4	5	3	4	4	3	4	3	21
39	4	4	4	5	3	4	4	3	4	4	22
45	4	4	5	5	4	4	5	4	5	5	23
39	4	4	4	5	3	4	4	3	4	4	24
39	4	3	4	5	4	4	3	4	4	4	25
34	3	3	4	5	3	4	4	3	3	2	26
39	4	4	4	5	3	4	4	3	4	4	27
41	4	4	4	5	4	4	4	3	4	5	28
42	4	4	4	5	4	4	4	4	4	5	29
39	4	4	4	5	3	4	4	3	4	4	30
43	4	4	4	5	4	4	4	4	5	5	31
42	4	4	4	5	4	4	5	4	4	4	32
39	4	4	4	5	3	4	4	3	4	4	33
36	3	3	4	5	3	4	3	4	4	3	34
38	3	3	4	5	4	3	4	4	4	4	35
35	3	3	3	5	4	4	4	3	3	3	36
37	4	3	4	5	4	3	3	3	4	4	37
40	3	4	4	5	4	3	4	4	4	5	38
42	4	4	4	5	4	4	5	4	4	4	39

In this research, this evaluation has been done regarding the extracted codes. The coding situation of the first researcher and that of the second one have been shown in the table and statistical results of SPSS software in Table 6. As you see, the obtained significant number for Kapa index is less than 0.05, so the assumption of independence for the extracted codes is rejected and their dependence verified. Therefore, it can be claimed that the tool used to extract the codes has had sufficient reliability (Table 6).

**Fourth stage: Extraction of paper information (Table 7)**

In this research, research information was classified in a table. This table consists of the information as follows (Honorton et al., 2018):

Identification information of the research: first and last names of authors, the year of publication Information of major findings: extracted components

**Table 6:** First and second cross-coder

Sum of the first coder	View of the second coder		View of the first coder
	No	Yes	
37	1	36	Yes
2	0	2	No
39	1	38	Sum of the second coder

**Table 7:** Values of agreement level

	Value	Significant number
Agreed Kapa	0.76	0.001
The number of cases	39	

**The analysis of qualitative findings (Table 9)**

First of all, the factors extracted from the studies were considered as identification, and then considering the

**Table 8:** Selected papers.

<i>Number</i>	<i>Paper Title</i>	<i>Researcher/Year</i>
C1	Key Insights on Dental Insurance Decisions Following the Rollout of the Affordable Care Act	Yarbrough et al (2014)
C2	Time to rethink dental “insurance”	Vujicic (2016)
C3	Providing dental insurance can positively impact oral health outcomes in Ontario	Zivkovic et al (2020)
C4	Wealth effects and dental care utilization in the US	Manski et al (2012)
C5	Dental insurance, income and the use of dental care in Canada	Bhatti et al (2007)
C6	Understanding and tackling oral health inequalities in vulnerable adult populations: from the margins to the mainstream	Watt et al (2019)
C7	Do welfare regimes matter for oral health? A multilevel analysis of European countries	Guarnizo et al(2017)
C8	Socioeconomic inequalities in the use of dental care services in Europe: what is the role of public coverage?	Palencia et al. (2014)
C9	Cost as a barrier to accessing dental care: findings from a Canadian population-based study	Thompson et al (2014)
C10	Income, dental insurance coverage, and financial barriers to dental care among Canadian adults	Locker et al (2011)
C11	Self-reported cost-prohibitive dental care needs among .Canadians	Ramaj et al (2013)
C12	Investigating the “inverse care law” in dental care: a comparative analysis of Canadian jurisdictions	Dehmoobadsharifabadi et al (2017)
C13	Dental insurance and its impact on preventive dental care visits for U.S. children	Lewis et al (2007)
C14	The impact of Medicaid insurance coverage on dental service use	Choi (2011)
C15	and ,Associations among dental insurance, dental visits unmet needs of US children	Yu et al. (2017)
C15	The individual and program impacts of eliminating .Medicaid dental benefits in the Oregon health plan	Wallace et al (2013)
C17	Self-rated dental health and dental insurance: modification by household income	Teusner et al (2007)
C18	Estimation of Price Elasticity and Effective Factors on Demand for Supplementary Insurance: Case Study Board’s Members and Staff of Health School; Tehran University of Medical Sciences	Barooni et al. (2014)
C19	Utilization of Dental Services and Its Out-of-Pocket Payments: A Study in Dental Clinics of Ramsar	Nahvi et al. (2017)
C20	Investigation of the effect of socio-economic status and insurance coverage on the use of dental services in adolescents	Bakhtiar et al. (2019)
C21	Health Complementary Insurance in Iran	Sheikhan (2013)
C22	Information system process of complementary health insurance service packages in selected countries and provision of a model for Iran	Vafaei Najar et al. (2006)
C23	Factors Affecting the Lack of Development of Complementary Insurance for the group treatment According to Insurance Industry Experts	Sehat and Ismaili(2007)
C24	Examination of people’s expectations of complementary health insurance providers and provision of a model for it	Moharami and Sami (2013)
C25	Modeling people’s Empowerment Strategies in the Health Insurance System Based on Z-Number Cognitive MappingMethod	Izadi et al. (2020)
C26	Analysis and determination of performance per capita of health insurance based on activity-based costing (ABC)method (Case study: Insured persons of health care services in Yazd province)	Moinuddin et al. (2016)
C27	Designing a Supplemental Health Insurance Plan andAnalyzing the Related Risk Factors Faced by Insurance Companies	Abtahi et al. (2019)
C28	Modeling the Impact of COVID-19 on Dental Insurance Coverage and Utilization	Choi et al (2021)
C29	Dental visits and associated emergency department-chargesin the United States: nationwide emergency department sample	Kelekar et al (2019)
C30	The impact of the ACA Medicaid expansions on dental visits by dental coverage generosity and dentist supply	Wehby et al (2019)
C31	A Model of Basic Dental Care Service for Iran	Bayat et al (2018)
C32	Oral health, dental insurance and the demand for dental care in Australia	Srivastava et al (2014)
C33	Relationship between risk assessment and payment models in Swedish Public Dental Service: a prospective study	Petersson et al (2017)
C34	Medicaid dental program delivery systems	Fontana et al (2020)
C35	Consolidation in the dental industry: a closer look at dental payers and providers	Nasseh et al (2020)
C36	Evaluating the impact of health insurance industryconsolidation: learning from experience	Dafny (2015)
C37	Less physician practice competition is associated with higher prices paid for common procedures	Austin et al (2013)
C38	Health insurer market power and primary care consolidation	Brunt (2014)
C39	HPI report shows dental spending increased again in 2016	Garvin (2017)

meaning of each, the identification was defined in a similar concept; next, the similar concepts were classified in the explained classes to be identified explained axes of the complementary insurance model designed for dental services of Iranian insurer organizations in the form of main research components. Major and minor classes resulting from the qualitative analysis are presented in the table below: In this stage, themes and concepts were identified. To identify them, two fundamental principles were used: 1) The principle of semantic differentiation and 2) the principle of completing research questions. Based on these two themes and in the higher level, the research concepts were determined. The results of this identity have been given in Table 9. In this stage, the extracted codes were identified in the form of 9 themes classified in a higher level in a concept form. Also, after reviewing this stage, the number of codes changed to 34 ones. This issue is semantic differentiation among codes that were differentiated based on the experts' views.

### Sixth stage: Analysis quality control

The correlation level of the experts' view has been obtained 0.750 from the potential antioxidant capacity (PAO) (or Holstein coefficient/ percentage of observed agreement), which is considerable. According to drawbacks of Holstein method, P-Scott index has also been calculated, whose value obtained 0.76. The fourth index of the validity evaluation of qualitative research is Cohen's Kappa index. Here, this index has been obtained 0.76. Lastly, Kerpindoroff's Alpha has also been used, whose value is evaluated 0.82.

### Seventh stage: The report presentation and study findings (Table 10)

In this stage of the meta-combination method, findings of past stages are presented. In this stage, using Shannon's entropy method, the support level of past research obtained from the findings of this research has been shown statistically.

**Table 9:** The identified themes and concepts in the *meta-combination*

Number	Codes	Themes	Concept
1	Dental service adequacy	Service coverage	
2.	Suitable and essential service (the need of each person annually for the dental service)		
3	Inclusive coverage		
4	The number of medical centers covered by insurance	Demographic factors	
5	The income level of an insured person		
6	The education level of an insured person		
7	Occupational conditions of an insured person		
8	Family conditions of an insured person	Economic factors	
9	Premium		
10	Payment commitment ceiling		
11	Invoice payment distance of non-contracted centers from the presentation time	Medical forces	Complementary dental insurance service model
12	Patient payment deductible		
13	The insured payment as the membership fee		
14	Insurance payment for the hospitalization expenses		
15	The number of contracted expert physicians	Official structure	
16	Up-to-date knowledge of the covered expert		
17	Access to physicians		
18	Physicians' professional ethics	Competitive advantage	
19	Registration conditions		
20	Contract extension conditions		
21	Administrative repayment conditions		
22	Document verification conditions	WOM	
23	Available environmental physical components (several branches)		
24	Online service expansion	Company marketing	
25	Suitable information presentation to the patients		
26	Patients' satisfaction	Customer orientation	
27	Insurance recommendation for other persons		
28	Brand equity		
29	Correct advertisement		
30	Identification of the patients' need		
31	Creation of competitive advantage relative to parallel insurance		
32	Management of customer communication		
33	Responsive to the complaint		
34	Handling of the complaint		



**Table 10:** The determination of importance level and past research emphasis on the presentation of complementary dental insurance model

<i>Primary codes</i>	<i>Frequency</i>	$\sum P_{ij} \times knP_{ij}$	<i>Lack of reliability <math>E_j</math></i>	<i>Importance coefficient <math>W_j</math></i>
Dental service adequacy	16	0.0774487	0.018354906	0.0187115
Suitable and essential service (the need of each person annually for the dental service)	12	0.0623432	0.014774994	0.0150621
Inclusive coverage	16	0.0774487	0.018354906	0.0187115
The number of medical centers covered by insurance	10	0.0542008	0.012845284	0.0130949
The income level of an insured person	5	0.0313738	0.007435417	0.0075799
The education level of an insured person	11	0.0583281	0.013823441	0.014092
Occupational conditions of an insured person	6	0.0362997	0.008602827	0.00877
Family conditions of an insured person	8	0.0455618	0.010797892	0.0110077
Premium	14	0.0700727	0.01660684	0.0169295
Payment commitment ceiling	8	0.0455618	0.010797892	0.0110077
Invoice payment distance of non- contracted centers from the presentation time	10	0.0542008	0.012845284	0.0130949
Patient payment deductible	14	0.0700727	0.01660684	0.0169295
Insured payment as the membership fee	12	0.0623432	0.014774994	0.0150621
Insurance payment for the hospitalization expenses	15	0.0738018	0.017490621	0.0178305
The number of contracted expert physicians	8	0.0455618	0.010797892	0.0110077
Up-to-date knowledge of the covered expert	2	0.0148092	0.003509693	0.0035779
Access to physicians	10	0.0542008	0.012845284	0.0130949
Physicians' professional ethics	8	0.0455618	0.010797892	0.0110077
Registration conditions	10	0.0542008	0.012845284	0.0130949
Contract extension conditions	9	0.0499499	0.011837857	0.0120679
Administrative repayment conditions	10	0.0542008	0.012845284	0.0130949
Document verification conditions	9	0.0499499	0.011837857	0.0120679
Available environmental physical components (several branches)	18	0.0845156	0.020029725	0.0204189
Online service expansion	25	0.1072562	0.025419135	0.025913
Suitable information presentation to the patients	17	0.0810184	0.019200915	0.019574
Patients' satisfaction	14	0.0700727	0.01660684	0.0169295
Insurance recommendation for other persons	16	0.0774487	0.018354906	0.0187115
Brand equity	19	0.0879442	0.020842291	0.0212472
Correct advertisement	13	0.0662554	0.015702168	0.0160073
Identification of the patients' need	14	0.0700727	0.01660684	0.0169295
Creation of a competitive advantage relative to parallel insurance	14	0.0700727	0.01660684	0.0169295
Management of customer communication	10	0.0542008	0.012845284	0.0130949
Responsive to the complaint	12	0.0623432	0.014774994	0.0150621
Handling of the complaint	6	0.0362997	0.008602827	0.00877

After identifying the research indicators based on the content analysis and determination of analysis units (words and themes), Shannon's entropy method will be used to analyze the data. In the first step, the decision matrix has been formed. The scores obtained from this matrix have been given around the target issue in the table below.

Savara method was used to calculate the weight of criteria. In this method, first, the experts sort the criteria based on their importance. The most important criterion is placed at first and gets the score of 1. Eventually, the criteria are ranked based on average relative importance values. The final weight order of each element and prioritization of obtained elements have been shown in the Table 11.

Based on the obtained results, we have:

The service coverage with the weight of 0.194 is placed at the first priority.

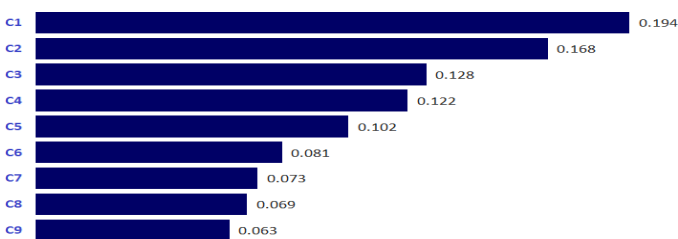
The economic factors with the weight of 0.168 are placed at the second priority.

The medical force with the weight of 0.128 is placed at the third priority. The customer orientation with 0.122 is placed at the fourth priority.

The competitive advantage with the weight of 0.102 is placed at the fifth priority. The company marketing with the weight of 0.081 is placed at the sixth priority. The official structure with 0.073 is placed at the seventh priority.

**Table 11:** The prioritization of elements in the study with Savara *method*

Criterion code	Average of relative importance	Kj	Primary Weight	Normal Weight
Service coverage	1	1	1	0.194
Economic factors	0.16	1.16	0.862	0.168
Medical forces	0.31	1.31	0.658	0.128
Customer orientation	0.05	1.05	0.627	0.122
Competitive advantage	0.19	1.19	0.527	0.102
Company marketing	0.27	1.27	0.415	0.081
Official structure	0.11	1.11	0.374	0.073
WOM	0.05	1.05	0.56	0.069
Demographic factors	0.09	1.09	0.326	0.063
Total			5.144	1



**Figure 1:** The final weight of elements of the financial performance with Savara method.

Word of mouth marketing (WOM) with 0.069 is placed at the eighth priority. The demographic factors with the weight of 0.063 are placed at the ninth priority.

## DISSCUSSION AND CONCLUSION

Generally, it can be said that the complementary insurance model of presented dental services consists of 9 major dimensions which were identified with the dimension of service coverage for components such as the dental service adequacy, suitable and essential service (the need of each person annually for the dental service), inclusive coverage as well as the number of medical centers covered by insurance. In the dimension of demographic factors, the components such as the income level, the education level, occupational conditions, and family conditions of an insured person were identified. In the dimension of economic factors, the components such as premium, payment commitment ceiling, invoice payment distance of non-contracted centers from the presentation time, patient payment deductible, insured payment as the membership fee and insurance payment for the hospitalization expenses were determined. In the dimension of medical forces, the components such as the number of contracted expert physicians, up-to-date knowledge of the covered expert, access to physicians and their professional ethics, and in that of the official structure, ones such as conditions of registration, contract extension, administrative repayment, and document verification were determined. In the competitive advantage, available environmental, physical components (several branches), online service expansion, and suitable patient information presentation were considered. In the dimension of WOM, patients' satisfaction, insurance recommendation for other persons, and brand equity were identified. In the dimension of company marketing, components such as advertising correctly, identifying the patients' needs,

and creating a competitive advantage relative to parallel insurance, and in that of customer orientation, those such as customer communication, response to the complaint and its handling were determined that all dimensions of components must be considered to have an efficient and suitable system for complementary insurance of dental services.

Comparing the results, it can be said that in the main factors, the service coverage is consistent with findings of Karami (2009)<sup>[5]</sup> and Zare et al (2011),<sup>[9]</sup> economic factors with subfactors (i.e. premium and payment commitment ceiling) and medical forces with subfactors (the number of contracted expert physicians, up-to-date knowledge of the covered expert, access to physicians and their professional ethics) consistent with findings of Christensen (2016)<sup>[24]</sup> and Zahedi (2009).<sup>[4]</sup> customer orientation with subfactors (customer communication, response to the complaint and its handling) consistent with findings Sigma (2009)<sup>[25]</sup> and Asli et al. (2010); competitive advantage with subfactors (available environmental physical components (several branches), online service expansion, and suitable information presentation to the patients) consistent with findings of Vafae Najar et al. (2006)<sup>[26]</sup> and Vafae Najar et al. (2008),<sup>[8]</sup> and Nomura (2008),<sup>[10]</sup> company marketing with subfactors (advertising correctly, identifying the patients' need, and creating a competitive advantage relative to parallel insurance) consistent with findings of Bloom (2010),<sup>[11]</sup> Christensen (2016),<sup>[24]</sup> and Zahedi (2009),<sup>[4]</sup> official structure with subfactors (conditions of registration, contract extension, administrative repayment, and document verification) consistent with findings of Hashim (2005),<sup>[18]</sup> and Perazzo (2017),<sup>[15]</sup> WOM with subfactors (patients' satisfaction, insurance recommendation for other persons, and brand equity) consistent with Ham and kotler (2000)<sup>[27]</sup> as well as Segal and Chen (2001).<sup>[28]</sup>

It is proposed to measure the financial burden of dental services accurately in the elderly group and use suitable strategies to support them against these costs as well as prioritize services such as restorative and root canal therapy whose use and cost are more than others. To promote the satisfaction level of insurance coverage, it is necessary to be considered the financial affordability of insurance coverage, the type of facilities, and the quality of the insurance service presentation in the policy associated with insurance. It is proposed that the dental part employs the expert human forces who will increase the customer's satisfaction and decrease the treatment costs in the future. The complementary insurance for people who have

cash purchases should consider special discounts to increase customers' satisfaction who want to buy with cash. After doing required treatments, after-treatment services should also be considered if there is dissatisfaction. The insurance organization must increase the ceiling of insurance coverage with an increase in different treatment coverage to reach profitability while receiving the complete service from customers.

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